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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/658,062

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Takashi Motoyoshi

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7590

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EXAMINER

IP, SIKYIN

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/658,062	MOTOYOSHI ET AL.	
	Examiner	Art Unit	
	Sikyin Ip	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,6,8-10,15 and 16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,6,8-10,15 and 16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-4, 6, 8-10, 15, and 16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The expressions “not more than 0.5% Cr” and “not more than 0.5% Mo” in claims 1-4 are not supported by the specification as originally filed. Specification as originally filed supports Cr and Mo as optional elements. However, when Cr and/or Mo are added to the claimed steel, Cr needs to be 0.005 to 0.5 wt.% and Mo needs to be 0.1 to 0.5 wt.% (page 4, lines 19-22). The expression “no more than 0.5% Cr” has introduced range of greater than zero to less than 0.005 wt.% as a new matter. The same reason applies to claim 16. The expression “no more than 0.5% Mo” has introduced range of greater than zero to less than 0.1 wt.% as a new matter.

A response filed by applicants dated March 28, 2006 has not provided support for the new ranges.

Claim Rejections - 35 USC § 103

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 6, and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese patent 6-179945.

The English abstract of JP'945 discloses a electric welded steel pipe for reinforcing motor car doors having an alloy with constituents whose wt% ranges overlap those recited by claims. Moreover, prior art tensile strength (TS) of 150 to 180Kgf/m² (equivalent 1471 to 1765.26MPa) and yield ratio(YR) of 70 to 85% overlaps with the TS range of 1700 MPA or more, and YR of 72% or less, respectively recited by claim 1. In any event, the overlap in alloy and property ranges establishes a prima facie case of obviousness because it would be obvious to one of ordinary skill in the art to select the claimed ranges from the broader disclosure of the prior art since the prior art has the same utility and similar properties, see MPEP 2144.05.

In regard to composition, alloy 2 in table 1 on page 5 of JP'945 meets the composition recited by claims 7 and 8 and when calculated.

Even though dislocation density recited by claim 6 is not taught by prior art, such property would be expected since prior art teaches hot and cold working and quenching which creates dislocations, and also similar properties are obtained, and in absence of proof to the contrary.

The English abstract of JP'945 teaches a steel pipe having a microstructure containing martensite produced by normalizing comprising the steps of heating at austenitic temperature and cooling.

In regard to claim 10, prior art in the English translation, paragraph 8 teaches pipe can be square shape or a variant steel pipe.

JP '945 has Mn content 0.4 wt.% higher than the claimed 1.60 wt.% Mn. However, it is well settled that a prima facie case of obviousness would exist where the claimed ranges and prior art do not overlap but are close enough that one ordinary skilled in the art would have expected them to have the same properties, *In re Titanium Metals Corporation of America v. Banner*, 227 USPQ 773 (Fed. Cir. 1985), *In re Woodruff*, 16 USPQ 2d 1934, *In re Hoch*, 428 F.2d 1341, 166 USPQ 406 (CCPA 1970), and *In re Payne* 606 F.2d 303, 203 USPQ 245 (CCPA 1979). To overcome the prima facie case, an applicant must show that there are substantial, actual differences between the properties of the claimed compound and the prior art compound. *In re Hoch*, 428 F.2d 1343-44, 166 USPQ 406 at 409.

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Claims 1-4, 6, 8-10, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okada et al (US Patent 5,374,322).

Okada discloses martensitic steel composition (abstract), tensile strength at least 120 kgf/mm² and yield ratio less than 75% (col. 2, lines 3-5), and cooling rate (col. 9, lines 3-56). Cooling rate is determined as function of microstructure (col. 9, lines 8-15) and thickness of steel plate (col. 9, lines 16-22). Cooling medium includes air, mist, shower, forced air, water quenching, or combination (col. 9, lines 45-56).

Okada discloses high tensile strength (TS) and low yield ratio (YR) martensitic steel welded pipes which meet the property limitations recited by claims 1 and 2. See examples in Tables 1 and 2: B1 having a TS 176Kg/mm² (1726MPa) and YR of 0.64 ; B6 having TS 183kg/mm²(1794.7MPa) and YR of 0.62; and B8 having TS of 185 (1814.3MPa) and YR of 0.62.

Okada discloses specific example B8 in Tables 1 and 2 having a Si content of 0.26% which falls within the equation range calculated at 0.17 to 0.31%, and has a tensile strength of 185kg/mm² (1814.3MPa) .

Even though dislocation density recited by claim 6 is not taught by prior art, such property would be expected since prior art teach hot and cold working which creates dislocations, and similar properties are obtained, and in absence of proof to the contrary.

In regard to claim 9, Okada on lines 31 to 42 of column 10 discloses induction heating at austenitic temperature followed by cooling. Even though prior art does not teach a prior austenite grain size number of 6 or more as claim 14, such would be

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expected since composition, process, and process limitations are closely met, and in absence of proof to the contrary.

Okada discloses electric resistance welded pipe which would include round or square sectional shape recited by claim 10.

Okada discloses electric-resistant welded pipes B10 in Tables 1 and 2 having composition and properties that closely meet claims 3 and 4. Note B10 has a TS of 210kg/mm² (2059.47MPa) and is within the TS of 1,900MPa recited by claim 3 and 2,000MPa recited by claim 4. Although B10 has a yield ratio of 85% which is higher than the 68% or less recited by claim 3 and 66% or less recited by claim 4, such would not be a patentable difference.

Okada in claim 1 of column 19 discloses a welded pipe having an alloy with constituents whose wt% ranges overlap those recited by the claim 8. The overlap in alloy wt% ranges establishes a prima facie case of obviousness because it would be obvious to one of ordinary skill in the art to select the claimed ranges from the broader disclosure of the prior art since the prior art has similar utility and properties, see MPEP 2144.05.

Also similar to recited water quenching, Okada in Table 2 and lines 31 to 44 makes steel pipe by hot rolling, forming pipe with ERW process, induction heating and cooling. Even though prior art cools with air whereas the present invention cools with water at a higher rate, such would not be a patentable difference since water has not been excluded as a cooling medium (col. 9, lines 45-56). Also applicant has not

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demonstrated (e.g. by comparative test data) that cooling rate is somehow critical and productive of new and unexpected results.

Okada has Cr content 0.5 wt.% higher than the claimed 0.50 wt.% Cr. However, it is well settled that a prima facie case of obviousness would exist where the claimed ranges and prior art do not overlap but are close enough that one ordinary skilled in the art would have expected them to have the same properties, *In re Titanium Metals Corporation of America v. Banner*, 227 USPQ 773 (Fed. Cir. 1985), *In re Woodruff*, 16 USPQ 2d 1934, *In re Hoch*, 428 F.2d 1341, 166 USPQ 406 (CCPA 1970), and *In re Payne* 606 F.2d 303, 203 USPQ 245 (CCPA 1979). To overcome the prima facie case, an applicant must show that there are substantial, actual differences between the properties of the claimed compound and the prior art compound. *In re Hoch*, 428 F.2d 1343-44, 166 USPQ 406 at 409.

Response to Arguments

Applicant's arguments filed November 30, 2007 have been fully considered but they are not persuasive.

Disclosing that a minimum of 0.005% Cr and a minimum of 0.1% Mo to obtain a beneficial result from optional **appropriate** Cr or optional **appropriate** Mo does not **exclude** the applicants from claiming 0 to 0.5% Cr and 0 to 0.5% Mo. The applicants are disclosing that greater than 0% to less than 0.005% Cr and greater than 0% to less than 0.1% Mo are

Applicants argue that ineffective or the same as 0% optional.

” But,

“minimum” already defined by applicants in original specification

when they are excessively added. Therefore, their **appropriate** amounts are 0.005 to 0.050% Nb, 0.005 to 0.07% V, 0.005 to 0.5% Cu, 0.005 to 0.5% Cr, 0.1 to 0.5% Mo and 0.1 to 0.5% Ni. (Emphasis added). ”

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Applicants' argument and court cases in pages 7-9 of instant remarks are noted. But, the court cases were misplaced because new matter is different from enablement. The range "greater than 0% to less than 0.005% Cr", for example, is clearly excluded by "minimum 0.005% Cr." Thus, claiming "greater than 0% to less than 0.005% Cr" is clearly new matter.

6. The cited prior art, JP 6-179945 ("JP '945") and U.S. Patent No. 5,374,322

Applicants argue that " ("US '322) does not disclose or suggest the steel pipe composition of claims 1 to 4 ~~and 17~~ ".

Instant claim 1 is listed as example against cited references.

Wt. %	Claim 1	JP 06179945 (abstract)	USP 5374322 (abstract)
C	0.19-0.35	0.15-0.3	0.15-0.4
Si	0.1-0.27	0.05-0.5	0.1-0.7
Mn	0.5-1.6	2-3	1-2.7
P	<0.025	0.005-0.02	<0.025
S	<0.01	0.0005-0.006	<0.015
Al	0.01-0.05	0.01-0.08	0.01-0.05
B	3-35 ppm	0.001-0.003	0-0.005
Ti	0.005-0.05	0.01-0.2	0-0.1
Cr	<0.5	0.1-0.7	1-3.5
Mo	<0.5	0.1-1.5	0-1.0
Fe	bal	Bal	Bal
TS	1700MPa<=	1471-1765	1176.8MPa<= (col. 2, lines 1-4
YR=(YS/TS)	<72%	70-85%	<75% (col.2,line 3-5

7. The cited prior art, JP '945 and US '322, teaches air cooling, not water

Applicants argue that “quenching. Air cooling provides a cooling rate of at most a few 100°C/min. ~~Water~~”

With respect to instant recited water quenching, it is not excluded by US '322

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5,374,322

ing, water quenching is not excluded from the present invention as long as the bainite index or the cooling rate (R is within the range of the present invention. 55).

8. The cited prior art, JP '945 and US '322, does not disclose or suggest a steel pipe which has, in combination, (i) a water quenched steel pipe having the steel composition defined in independent claims 1 to 4 and 17 and (ii) a tensile strength (TS) of

Applicants argue that “ 1700 MPa (173.9 kgf/mm²) or higher. ”

Applicants' attention is directed to Table above that listed instant claim 1 and references.

JP '945 has a big difference in the Mn content and the cooling rate in the steel production. The present invention defines the Mn content to be 0.5 - 1.6%. On the other hand, JP '945 defines the Mn content to be 2.0 - 3.0%. JP '945 clearly discloses that Mn

Applicants argue that “ must be maintained at the lower limit of 2.0% for increasing tensile strength and elongation. ”

But, applicants fail to substantiate their position by factual evidence that the claimed Mn content is critical.

Applicants' argument with respect to cooling rate in pages 14 and 16 of instant remarks is noted. But, instant claims are product claims not process claims. Moreover, there is no factual evidence that the cooling is critical to claimed properties which would not inherently possess by product of cited reference.

~~highest is not insignificant. A 25% difference is not prima facie obvious. JP '945 cannot~~
Applicants argue that “ ~~obtain a tensile strength of 1700 MPa using the composition of the steel claimed in~~ ”

Applicants' attention is directed to abstract of JP '945 that

~~comparing a structure of martensite, and bainite, obtained by normalizing. The pipe~~
~~has a tensile strength of 150-180 kgf/mm², elongation of at least 10%, and yield~~
“ ~~ratio of 0.70-0.85.~~ 1471- 175.26 MPA ”

Applicants' argument in page 15, “Composition and Cooling” of instant remarks is noted. Examiner reiterates the response above that applicants fail to substantiate their position by factual evidence that the claimed Mn content is critical.

Applicants argue that comparative Examples 1-3 of JP '945 fail to disclose the claimed steel pipe composition. But, the examples of the cited reference are given by way of illustration and not by way of limitation.

~~Comparative Examples 1, 2 and 3 of JP '945 do not disclose or suggest the~~
~~steel composition of the present invention or a minimum tensile strength (TS) of 173.9~~

Applicants argue that “ kgf/mm² (1700 MPa) required by the present invention. ” Examiner reiterates the response immediately above and applicants' attention is directed to

~~comparing a structure of martensite, and bainite, obtained by normalizing. The pipe~~
~~has a tensile strength of 150-180 kgf/mm², elongation of at least 10%, and yield~~
abstract of JP '945 “ ~~ratio of 0.70-0.85.~~ 1471- 175.26 MPA ”

Applicants' argument in page 18 of instant remarks with respect to Mn is noted. But, there is no factual evidence that the claimed Mn content is critical. Unexpected results must be established by factual evidence. Mere argument or conclusory statements in the specification is not sufficient. In re Geisler (CA FC) 43 USPQ2d 1362 (7/7/1997) and Ex parte Gelles, 22 USPQ2d, 1318. Unexpected results have not been shown by the page 7, lines 30-32 of the instant specification because which fail to compare the claimed subject matter with the closest prior art. In re Burckel, 201 USPQ 67, In re

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Baxter Travenol Labs., 952 F.2d 388, 392, 21 USPQ2d 1281, 1285 (Fed. Cir. 1991), and In re De Blauwe, 736 F.2d 699, 705, 222 USPQ 191, 196 (Fed. Cir. 1984).

Comparison must be done under identical condition except for the novel features of the invention. In re Brown, 173 USPQ 685 and In re Chapman, 148 USPQ 711. The showing of unexpected results must be occurred over the entire claimed range. In re Clemens, 622 F.2d 1029, 206 USPQ 289, 296 (CCPA 1980). The scope of the showing must be commensurate with the scope of the claims. MPEP § 716.02(d), In re Tiffin, 448 F.2d 791, 792 (Fed. Cir. 1971), In re Coleman, 205 USPQ 1172, In re Grasselli, 713 F.2d 731, 743, 218 USPQ 769, 778 (Fed. Cir. 1983), and In re Greenfield, 197 USPQ 227.

Applicants' argument with respect to cooling rate of JP '945 is noted. But, according to applicants and instant Figure 2, cooling rate affects YR. Claimed YR in claim 1, for example, has been met by YR of JP '945.

Applicants argue that cited references do not disclose the claimed compositions. But, applicants have not shown that the Mn and Cr contents are critical.

Applicants argue that US '322 teaches air cooling not water quenching. But water quenching is not exclude by US '322 (col. 9, lines 53-56).

Applicants argue that JP '945 and US '322 do not suggest combination of steel pipe and tensile strength. Applicants' attention is directed to abstract of JP '945 below

has a tensile strength of 150-180 kgf/mm², elongation of at least 10%, and yield ratio of 0.70-0.85. The pipe
1471- 175.26 MPA

which teaches tensile strength and yield ratio anticipated the instant claim 1. US '322

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discloses the resistance to impact of the steel member and to further increase its strength so as to decrease the weight of the member, it is necessary to achieve a T. S. of 120 kgf/mm² or more and a yield ratio (yield strength/tensile strength) of 75% or less. However, such levels strength 120 kgf/mm² or more and yield ratio 75% or less.

US '322 has a big difference in the Cr content and the cooling rate in the steel

Applicants argue that " production. The present invention defines the Cr content as less than 0.5%. ~~On the other~~ "

Okada has Cr content 0.5 wt.% higher than the claimed 0.50 wt.% Cr. However, it is well settled that a prima facie case of obviousness would exist where the claimed ranges and prior art do not overlap but are close enough that one ordinary skilled in the art would have expected them to have the same properties, In re Titanium Metals Corporation of America v. Banner, 227 USPQ 773 (Fed. Cir. 1985), In re Woodruff, 16 USPQ 2d 1934, In re Hoch, 428 F.2d 1341, 166 USPQ 406 (CCPA 1970), and In re Payne 606 F.2d 303, 203 USPQ 245 (CCPA 1979). To overcome the prima facie case, an applicant must show that there are substantial, actual differences between the properties of the claimed compound and the prior art compound. In re Hoch, 428 F.2d 1343-44, 166 USPQ 406 at 409.

Fig. 1 of Attachment A hereto shows each alloying elements affect on the critical cooling rate. This Fig. 1 is from the Technical Publication "Iron & Steel Materials"

Applicants argue that " (1981, p 242). "

But, Figure 1 fails to show the interaction of combination of elements with respect to the cooling rate. Moreover, arguendo the cooling rate effects of listed elements are

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predictable according to Figure 1, it would have been obvious for ordinary skill artisan to adjust the element amount to optimize the cost, strength, and cooling rate.

~~maximum Cr (0.50%) in the steel composition of the present invention. A 100% difference is not prima facie obvious. US '322 cannot obtain a tensile strength of 1700 MPa using the~~

Applicants argue that “ ~~composition of the present invention.~~ ”

But, claimed tensile strength and yield ratio have been taught

5,374,322

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the resistance to impact of the steel member and to further increase its strength so as to decrease the weight of the member, it is necessary to achieve a T. S. of 120 kgf/mm² or more and a yield ratio (yield strength/tensile strength) of 75% or less. However, such levels

Applicants' argument in page 21 is noted. But, martensite of cited references, for example, US '322 is also formed by quenching

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degradation in toughness and easy occurrence of quenching cracks.

(Cooling Rate)

Restrictions on the cooling rate are introduced so as to make quenching achievable by air cooling without resulting in bends. The restrictions on the cooling rate are defined by the before-mentioned Equation (3).

According to the cooling conditions of the present invention, a martensite + bainite complex structure predominantly comprising martensite with a satisfactory level of strength and toughness and a yield ratio of 0.75 or less can be obtained. When the cooling rate is outside the range of the present invention, the desired effects mentioned above cannot be obtained.

15

. Moreover,

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5,374,322

ing, water quenching is not excluded from the present invention as long as the bainite index or the cooling rate R is within the range of the present invention.

55

. The recited YR due to

the water quenching rate is also met by USP '322 “0.75 or less.” See col. 9, lines 8-13.

Applicants' argument with respect to Cr content of USP '322 is noted. But, there is no factual evidence that the claimed Cr content is critical.

Applicants' argument in pages 22-24 is noted. First, the instant claims are product claims. The invention defined in a product-by-process claim is a product, not a process. In re Bridgeford, 357 F. 2d 679, 149 USPQ 55 (CCPA 1966) and MPEP § 2113. It is the patentability of the product claimed and not of the recited process steps which must be established. See In re Brown, 459 F. 2d 531, 173 USPQ 685 (CCPA 1972). When applicant's and prior art's products are to be identical or substantially identical, the burden shifts to applicant to provide evidence that the prior art product does not inherently possess the claimed properties. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977). Second, the high cooling rate merely means single phase of martensite as predicted by the index.

Applicants' argument in page 24, "Summary" of instant remarks is noted. But, applicants fail to substantiate their position that conventional water quenching rate must at least 6000°C/min.

Applicants' argument in pages 25-28 of instant remarks is noted. But, applicants fail to provide factual evidence that the combination of claimed composition and cooling rate possesses unexpected result over the composition and cooling rate of US '322.

It is readily apparent that any example of US '322 that has a tensile strength

(TS) of 173.9 kg/mm² or greater has a composition that is outside the composition of the

Applicants argue that “ steel pipe of the present invention as defined in independent claims 1 to 4. ” First,

examples are for illustration not for limitation. Second, as are evinced by the examples that the claimed tensile strength has been disclosed.

Applicants' argument with respect to dislocation density is noted. But, there is no factual evidence that the dislocation density would not have been inherently possessed by the steels of cited references.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

The above rejection relies on the reference(s) for all the teachings expressed in the text(s) of the references and/or one of ordinary skill in the metallurgical art would have reasonably understood or implied from the text(s) of the reference(s). To emphasize certain aspect(s) of the prior art, only specific portion(s) of the text(s) have been pointed out. Each reference as a whole should be reviewed in responding to the rejection, since other sections of the same reference and/or various combination of the cited references may be relied on in future rejection(s) in view of amendment(s).

All recited limitations in the instant claims have been met by the rejections as set forth above.

Applicant is reminded that when amendment and/or revision is required, applicant should therefore specifically point out the support for any amendments made to the disclosure. See 37 C.F.R. § 1.121; 37 C.F.R. Part §41.37 (c)(1)(v); MPEP §714.02; and MPEP §2411.01(B).

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Examiner Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to S. Ip whose telephone number is (571) 272-1241. The examiner can normally be reached on Monday to Friday from 5:30 A.M. to 2:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Roy V. King, can be reached on (571)-272-1244.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Sikyin Ip/
Primary Examiner, Art Unit 1793

February 18, 2008